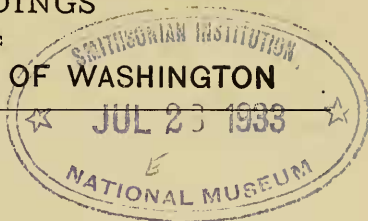


PROCEEDINGS
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DESCRIPTIONS OF TWO RACES OF *PEROGNATHUS*
AMPLUS FROM ARIZONA.

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Among the mammals collected during the summer and autumn of 1932 by Miss Annie M. Alexander and Miss Louise Kellogg in the southwestern United States, and given to the Museum of Vertebrate Zoology of the University of California, are specimens representing two undescribed races of *Perognathus amplus*. One series obtained on the black sand in the vicinity of the Wupatki Ruins of the Wupatki National Monument in northern Arizona represents a race having the highest degree of dark pigmentation yet known in the subgenus *Perognathus*. Another series from near the Little Colorado River at Cameron, Arizona, is distinct from the Wupatki series and also from other described races of *Perognathus amplus*.

***Perognathus amplus cineris*, new subspecies.**

Type.—Male, adult, skin and skull, no. 55771, Mus. Vert. Zool.; from near the Wupatki Ruins, Wupatki National Monument (about 27 miles northeast of Flagstaff), Coconino County, Arizona; collected October 12, 1932, by Annie M. Alexander; original number 1932.

Distribution.—Known only from ground covered with black sand (volcanic cinders) in the vicinity of the Wupatki Ruins, but possibly also occurring in similar places elsewhere in the San Francisco Mountain volcanic field.

Diagnostic characters and comparisons.—A race of *Perognathus amplus* characterized by small size, nearly black dorsal coloration, and dark ventral coloration. Compared with *P. a. amplus* Osgood and *P. a. pergracilis* Goldman: distinctly smaller (see measurements); dorsal coloration prevalently blackish rather than yellowish, subterminal bands much narrower and less richly colored, belly hairs heavily pigmented rather than lightly pigmented or unpigmented, ears much more heavily pigmented, tail less

distinctly bicolor; skull smaller, more highly arched, mastoid and tympanic bullae less inflated, mastoid bullae projecting less posteriorly to plane of occiput. Much darker and smaller than *P. a. rotundus* Goldman. Darker than *P. a. taylora* Goldman. Most like *P. a. ammodytes* (description below) except in color.

Color (terms after Ridgway, Color Standards and Color Nomenclature, 1912).—Dorsal hairs with apical portions black, subterminal bands pale ochraceous-salmon, basal portions plumbeous. Breast and throat white. Hairs of belly plumbeous basally, tipped with light ochraceous-buff. Tail indistinctly bicolor. Hairs on dorsal side of tail black; on ventral side, black, or pale ochraceous-buff tipped with black, the black hairs most numerous terminally. Hairs of hind feet mixed white or pale ochraceous-buff, the latter predominating. Skin of ears black-pigmented. A stripe of black hairs extends from tip of nose to base of vibrissae. Most noteworthy characters of color are: abundance of black pigment and small amount of yellow pigment in dorsal hairs; narrow subterminal bands; heavy pigmentation of belly hairs and of skin of ears; black stripe from nose to base of vibrissae; nearly unicolor dark tail.

Specimens examined.—Total number, 14, all from the vicinity of the Wupatki Ruins.

Remarks.—This dark race was found to be closely restricted to ground covered with black sand. The specimens were secured at several places between 2.6 miles west of the ruins and along the road between the ruins and Heiser Spring.

Perognathus amplus ammodytes, new subspecies.

Type.—Male, adult, skin and skull, no. 55774, Mus. Vert. Zool.; from 2 miles south of Cameron, Coconino County, Arizona; collected August 8, 1932, by Louise Kellogg; original number 1620.

Distribution.—Known only from near the type locality.

Diagnostic characters and comparisons.—A race of *Perognathus amplus* characterized by small size, dark dorsal color, and pigmented belly hairs. Compared with *P. a. cineris*: general coloration prevailingly yellowish rather than blackish, subterminal bands of hairs of dorsal surface broader, belly hairs tipped with white and less heavily pigmented, tail more distinctly bicolor, all hairs on hind feet white rather than some yellowish and some white, lacks dark stripe between tip of nose and base of vibrissae; size slightly greater; skull averages slightly larger, relatively narrower. Compared with *P. a. amplus* and *P. a. pergracilis*: general coloration darker, belly hairs always pigmented, never white; smaller in body size and in skull; mastoid bullae less inflated posteriorly, not projecting as far past plane of occiput.

Color.—Dorsal hairs with tips black, wide subterminal bands light ochraceous-buff, basal portions plumbeous. Hairs of breast and throat white. Hairs of belly with French gray bases, subterminal bands of pinkish buff, and white tips. Narrow stripe of black hairs on dorsal side of tail, rest of tail hairs pinkish buff. Hairs of hind feet white. Skin of ears dark-pigmented. A spot of black hairs on nose and at base of vibrissae.

Specimens examined.—Total number, 7, all from the vicinity of Cameron, Coconino County, Arizona, as follows: east bank of Little Colorado River at Tuba City road bridge (opposite Cameron), 3; 2 miles south of Cameron, 3; 3 miles south of Cameron, 1.

Remarks.—Pocket mice of the *amplus* group apparently are usually not numerous near Cameron. Three specimens were obtained by F. B. Sumner and H. S. Swarth in 1922 on the east bank of the Little Colorado opposite Cameron. In 1931 I spent 3 days (630 trap nights) at the same place in an attempt to secure additional specimens, but was not successful. In 1932 Miss Alexander and Miss Kellogg obtained 4 specimens south of Cameron on the west side of the river in sandy ground where the chief vegetation was bunch grass and saltbush.

Two other species of *Perognathus* have their darkest races on the lava and cinder beds of the San Francisco Mountain volcanic field. These are *P. flavus fuliginosus* Merriam and *P. apache cleomophila* Goldman. The parallelism in color in these species is probably the result of the same cause, which I believe to be natural selection for concealing coloration.

Perognathus amplus is a species clearly distinct from *P. flavus* and *P. apache*. The two races of *amplus* here described are easily distinguishable in the field from the dark races of *flavus* and *apache* by having actually and relatively longer, more penicillate tails. They show some approach in small size and long tails to the species *P. longimembris* which is represented north of the Grand Canyon by the race *P. l. arizonensis* Goldman, but the differences in size and in skull characters are too great to indicate conspecificity.

MEASUREMENTS IN MILLIMETERS AND GRAMS OF ADULT MALES OF *Peroquathus amplus ammodytes*, *Peroquathus amplus cineris*,
Peroquathus amplus (TOPOTYPE), *Peroquathus amplus pergracilis* (FROM DETRITAL VALLEY, ARIZONA).

	Body Measurements					Skull Measurements					
	Total length	Tail	Hind foot	Head and body	Weight	Occipito-nasal	Fronto-nasal	Breadth across mastoids above spur of squamosals	Greatest length of mastoid	Distance between styloid mastoid foramina	Least interorbital breadth
No. Specimens.....	3	3	4	4	4	3	3	1	4	1	4
Mean.....	145.7	79.7	20.8	64.8	9.2	23.3	16.0	12.8	8.8	11.2	5.5
Minimum.....	143	76	20	61	8.5	22.9	15.7		8.5		5.3
Maximum.....	150	83	21	67	10.0	23.8	16.3		8.9		5.6
No. specimens.....	7	7	7	7	7	7	7	7	7	7	7
Mean.....	141.9	77.1	19.9	64.8	9.1	22.6	15.4	12.7	8.6	11.3	5.5
Minimum.....	138	75	19	62	7.7	22.2	15.1	12.5	8.4	11.0	5.3
Maximum.....	148	82	21	66	10.3	23.2	15.8	12.9	8.9	11.4	5.6
No. specimens.....	1	1	1	1	1	1	1	1	1	1	1
Mean.....	156	82	21	74	14.8	24.3	16.1	13.1	9.1	11.8	5.4
No. specimens.....	18	18	18	18	18	18	18	18	18	17	18
Mean.....	158.3	86.0	20.9	72.3	13.2	23.8	16.1	13.4	8.9	11.8	5.6
Minimum.....	147	77	20	69	11.5	22.7	15.4	12.8	8.7	11.3	5.3
Maximum.....	167	94	22	80	14.7	24.7	16.8	14.1	9.5	12.3	6.1